Slavomír Hanzely

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Synopses

- Researcher tackling challenging problems on the boundary of Mathematics and Computer Science. Enjoying testing my skills against novel problems
- Proven performance in working independently, collaborating with peers, and leading projects
- Efficiently communicates complex ideas to audiences of all levels and cultures
- Qualities: quick learner, persistent, well-organized, high attention to details

Expertise

Optimization, Machine Learning, Federated Learning, Mathematics, Algorithms, Programming

Education

King Abdullah University of Science and Technology, Saudi Arabia
Ph.D., Applied Mathematics and Computational Sciences 2023 (expected)
MSc., Applied Mathematics and Computational Sciences 2020
Topic: Optimization for Machine Learning, group of P. Richtárik

Comenius University, Slovakia
BSc., Computer Science 2019
Superfluous amount of courses:

- 1st year: 95 credits (recommended amount is 60), including master's courses
- Until graduation passed 7 master courses and unofficially passed (due to exceeding the maximal number of credits) 8 extra courses
- Passed finals year in advance and with the best grades

Awards

King Abdullah University of Science and Technology

- Dean's Award (3 consecutive years)
- Ph.D. scholarship of USD 75,000/year
- MSc. scholarship of USD 70,000/year

Vojtech Jarnik International Mathematical Competition
2017: 8-10th place (39 universities participated)

Mathematical Olympiad
2016: 3rd place, Slovak national round
International Mathematical Olympiad participation
2015: bronze medal, Middle European Mathematical Olympiad

Work Experience

Flatiron Institute, Simons Foundation June 2022 – July 2022
Research associate, group of R. Gower
Investigatigated ML loss reformulations and designed fast variance-reduced algorithms.

Mohamed bin Zayed University of AI Feb 2022 – Apr 2022
Research assistant, group of M. Takáč
Developed second-order optimization methods that are fast, practical and provably convergent.
• Resulting in a paper accepted at NeurIPS 2022 (link)

Wincent (crypto trading company) Jun 2020 – Aug 2020
Research intern / software engineer
Analyzed, modeled, designed practical algorithms to optimize resource allocation of the company; and implemented the developed methods under various constraints.

Mathematical Olympiad 2017 – 2019

- Marked problems at the national round (3 times)
- Organized national selection camp for the International Mathematical Olympiad
  - created the problem sets for a day and marked the solutions (3 times)
  - restructured format of the camp and created all problem sets (team of 4 people)

Extracurricular Activities

Trojsten (nonprofit organization) 2016 – 2019

Volunteer

- Prepared competitions and camps (in Math, CS) for talented high school students
  - co-organized 14 competitions (3 as a head organizer)
  - co-organized 20 camps (4 as a head organizer)
  - problem selection: 20 problem sets, ∼200 hours of work
  - marked solutions: ∼600 solutions, ∼150 hours of work
- Lectured: delivered 38 lectures (including a half-day lecture)

Publications

- Convergence of First-Order Algorithms for Meta-Learning, arxiv 2023
  Mishchenko, Hanzely, Richtárik
- A Damped Newton Method Achieves Global $\mathcal{O}(1/k^2)$ Convergence Rate, NeurIPS 2022
  Hanzely, Kamzolov, Pasechnyuk, Gasnikov, Richtárik, Takáč
- Distributed Newton-Type Methods with Communication Compression, arxiv 2022
  Islamov, Qian, Hanzely, Safaryan, Richtárik
- ZeroSARAH: Nonconvex Optimization with Zero Full Gradient Computation, arxiv 2021
  Li, Hanzely and Richtárik
- Lower Bounds & Optimal Algorithms for Personalized Federated Learning, NeurIPS 2020
  F. Hanzely, S. Hanzely, Horváth and Richtárik
- Adaptive Learning of the Optimal Mini-Batch Size of SGD, OPT-ML, NeurIPS 2020
  Alfarra, Hanzely, Albasyoni, Ghanem and Richtárik

Presentations NeurIPS, IST Austria, KINIT, Flatiron Institute, MBZUAI, Ecole Polytechnique (planned)

Technical skills

Research

- Topics: Federated Learning, Higher-Order Algorithms, Stochastic Optimization
- Reviewing: ICML (conference), NeurIPS (conference), TLMR (journal)
- Qualities: patience, persistence, well-organized

Programming

- Python, PyTorch, Julia, C/C++, Bash
- Flexibility: experience with Matlab, R, Mathematica, SQL, Java, Javascript, Haskell

Cross-cultural communication

- Co-organized large ultimate frisbee tournament
  (largest tournament in MENA region & first mixed tournament in Saudi Arabia)
- Studying and working in various international communities
- Organizing a research group seminar
- Organizing a research session at IFORS 2023 conference
- Languages: English, Slovak, French (basics), Russian (passive), Spanish (passive)